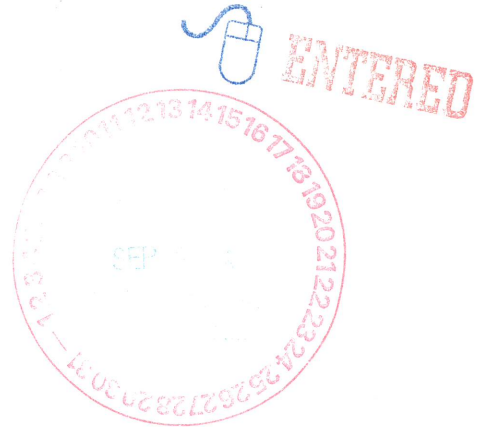


Department of Energy
Carlsbad Field Office
P. O. Box 3090
Carlsbad, New Mexico 88221
SEP 09 2004



Mr. Steve Zappe, WIPP Project Leader
Hazardous Waste Permits Program
New Mexico Environment Department
2905 E. Rodeo Park Drive, Bldg. 1
Santa Fe, NM 87505

Subject: Transmittal of Approved RFETS WSPF Number RF107.07 TRU Solidified Inorganic Waste

Dear Mr. Zappe:

The Department of Energy, Carlsbad Field Office (CBFO) has approved the Rocky Flats Environmental Technology Site (RFETS) Waste Stream Profile Form (WSPF) RF107.07 TRU Solidified Inorganic Waste.

Enclosed is a copy of the approved form as required by Section B-4(b)(1) of the WIPP Hazardous Waste Facility Permit, No. NM4890139088-TSDF.

If you have any questions on this matter, please contact me at (505) 234-7357 or (505) 706-0066.

Sincerely,

Kerry W. Watson, Director
Office of Characterization and Transportation

Enclosure

cc: w/o enclosure
R. McCallister, CBFO *ED
J. Kieling, NMED
C. Walker, TechLaw
M. Strum, WTS *ED
R. Chavez, WRES *ED
L. Greene, WRES
S. Calvert, CTAC *ED
WIPP Operating Record
CBFO M&RC

*ED denotes Electronic Distribution



WIPP WASTE STREAM PROFILE FORM

RF107.07, Revision 0
Page 1 of 20
August 23, 2004Waste Stream Profile Number: RF107.07Generator site name: RFETSTechnical contact: Eric D'AmicoGenerator site EPA ID: CO7890010526Phone number: (303) 966-5362Date of audit report approval by NMED: March 9, 2000 as amended February 6, 2001; May 24, 2001; June 5, 2001; April 5, 2002; April 8, 2002; August 20, 2002; August 29, 2002; December 20, 2002; April 8, 2003; September 19, 2003; December 30, 2003 and July 14, 2004Title, version number, and date of documents used for WAP certification: Rocky Flats Environmental Technology Site TRU Waste Characterization Program Quality Assurance Project Plan, 95-QAPjP-0050, Version 10, August 2004.Transuranic (TRU) Waste Management Manual, Version 7, 1-MAN-008-WM-001, February 2004. Contact-Handled Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant, Revision 1.0. March 2004.Did your facility generate this waste? ☒ Yes ☐ No If no, provide the name and EPA ID of the original generator:**Waste Stream Information ⁽¹⁾**WIPP ID: RF-TT0802, RF-TT0809 ⁽²⁾Summary Category Group: S3000 ⁽²⁾Waste Matrix Code Group: Solidified InorganicsWaste Stream Name: TRM Solidified Inorganic Waste (F001, F002, F005, F006, F007, F009, P030, P098, P099, P106, U003, U103, U108) ⁽²⁾Description from the WTWBIR: IDC 802 is a cemented final waste form. IDC 809 consists of unleached resin (IDC 430) and leached resin (IDC431) ⁽²⁾Defense TRU Waste: ☒ Yes ☐ NoCheck one: ☒ CH ☐ RH Number of SWBs N/A Number of Drums 268 Number of Canisters N/ABatch Data Report numbers supporting this waste stream characterization: See Table 7.List applicable EPA Hazardous Waste Codes ⁽³⁾: Numbers F001, F002, F005, F006, F007, F009, P030, P098, P099, P106, U003, U103, U108Applicable TRUCON Content Codes: RF 111A/211A, RF 111B/211B, RF 111D/211D, RF 111DF/211DF, RF 111E/211E, RF 111H/211H, RF 111J/211J, RF 111K/211K, RF 111P/211P, RF 111PF/211PF, RF126A/226A, RF126D/226D, RF126DA/226DA, RF126DAF/226DAF, RF126DF/226DF, RF126E/226E, RF126J/226J, RF126K/226K, RF126L/226L, RF126P/226P, RF126PF/226PF**Acceptable Knowledge Information ⁽¹⁾****Required Program Information**

- Map of site: Reference List, No. 3
- Facility mission description: Reference List, No. 3
- Description of operations that generate waste: Reference List, Nos. 1, 2, 3, 6
- Waste identification/categorization schemes: Reference List, Nos. 14, 15
- Types and quantities of waste generated: Reference List, Nos. 1, 2, 3, 6
- Correlation of waste streams generated from the same building and process, as appropriate: Reference List, Nos. 1, 2, 6
- Waste certification procedures: Reference List, No. 5

Required Waste Stream Information

- Area(s) and building(s) from which the waste stream was generated: Reference List, Nos. 1, 2, 6
- Waste stream volume and time period of generation: Reference List, Nos. 4, 6
- Waste generating process description for each building: Reference List, Nos. 1, 2, 6
- Process flow diagrams: Reference List, Nos. 1, 2
- Material inputs or other information identifying chemical/radionuclide content and physical waste form: Reference List, Nos. 1, 2, 3, 6
- Which Defense Activity generated the waste: (Check one) Reference List, No. 3
 - ☒ Weapons activities including defense inertial confinement fusion
 - ☐ Naval Reactors development
 - ☐ Verification and control technology
 - ☐ Defense research and development
 - ☐ Defense nuclear waste and material by products management
 - ☐ Defense nuclear materials production
 - ☐ Defense nuclear waste and materials security and safeguards and security investigations

WIPP WASTE STREAM PROFILE FORM

RF107.07, Revision 0

Page 2 of 20

August 23, 2004

Supplemental Documentation:

- Process design documents: Note 4
- Standard operating procedures: Note 4
- Safety Analysis Reports: Note 4
- Waste packaging logs: Note 4
- Test plans/research project reports: Note 4
- Site data bases: Note 4
- Information from site personnel: Note 4
- Standard industry documents: Note 4
- Previous analytical data: Note 4
- Material safety data sheets: Note 4
- Sampling and analysis data from comparable/surrogate Waste: Note 4
- Laboratory notebooks: Note 4

Sampling and Analysis Information(1)*[For the following, when applicable, enter procedure title(s), number(s) and date(s)]*

- ☒ Radiography: Reference List, Nos. 19, 20, 21
- ☒ Visual Examination: Reference List, Nos. 22, 23
- ☒ Headspace Gas Analysis
 - VOCs: Reference List, No. 7, 17, 18
 - Flammable: Reference List, No. 7, 17, 18
 - Other gases (specify): N/A
- ☒ Homogeneous Solids/Soils/Gravel Sample Analysis
 - Total metals: Reference List, Nos. 11, 12
 - PCBs: N/A
 - VOCs: Reference List, No. 8
 - Nonhalogenated VOCs: Reference List, No. 10
 - Semi-VOCs: Reference List, No. 9
 - Other (specify): N/A

Waste Stream Profile Form certification:

I hereby certify that I have reviewed the information in this Waste Stream Profile Form, and it is complete and accurate to the best of my knowledge. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.


Signature of Site Project ManagerG. A. O'Leary, Manager TRU Programs
Printed Name and Title8/23/04
Date
Signature of Site QA OfficerC. L. Ferrera, TWCP Site QAO
Printed Name and Title8/23/04
Date**NOTE**

- (1) Use back of sheet or continuation sheets, if required.
- (2) The waste stream name in the TWBIR for RF-TT0809 is incorrect, the waste is cemented resins. In addition, this waste stream has been characterized as mixed waste and the waste stream name changed to TRM Solidified Inorganic Waste. The waste matrix code group for cemented resins and the waste matrix code for solidified lab waste in the TWBIR are incorrect. The waste is greater than 50 percent inorganic, consisting of small quantities of aqueous liquids and organic resin solidified in large quantities of Portland cement; therefore Waste Matrix Code S3190 has been designated for this waste. The Waste Stream Name, Description, Summary Category Group, Waste Matrix Code, and EPA Hazardous Waste Numbers are based on acceptable knowledge (see attached Acceptable Knowledge Summary).
- (3) EPA Hazardous Waste Codes were determined using acceptable knowledge and confirmed using solids and headspace gas sampling and analysis (see attached Characterization Information Summary documenting this determination).
- (4) See the References section in the Acceptable Knowledge Summary (attached) for additional backup documentation associated with this waste stream.

REFERENCE LIST

1. Backlog Waste Reassessment Baseline Book, Waste Form 60, Solidified Lab Waste, July 2004.
2. Waste Stream and Residue Identification and Characterization (WSRIC), Version 7, April 2004, and archived versions.
3. RFETS TRU Waste Acceptable Knowledge Supplemental Information, RF/RMRS-97-018, Revision 13, April 2004.
4. Waste and Environmental Management System (WEMS) database.
5. Transuranic (TRU) Waste Certification, PRO-X05-WC-4018, Version 7, March 2004.
6. Acceptable Knowledge TRU/TRM Waste Stream Summaries, RMRS-WIPP-98-100, Section 7.25, Revision 0, May 2004.
7. GC/MS Determination of Volatile Organics Waste Characterization, L-4111-X, January 2002.
8. Volatile Organic Compounds by Gas Chromatography Mass Spectrometry, ACMM-9260, Revision 9, July 2003.
9. Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry, ACMM-9270, Revision 5, April 2003.
10. Determination of Nonhalogenated Volatile Organics by Gas Chromatography, ACMM-9441, Revision 8, April 2003.
11. Determination of Mercury by CVAA for TRU Waste Characterization, ACMM-2810, Revision 2, April 2003.
12. Determination of Metals by ICP-AES for TRU Waste Characterization, ACMM-2901, Revision 2, April 2003.
13. Waste Characterization, Generation, and Packaging, 1-PRO-079-WGI-001, Revision 4, May 2002.
14. Waste Characterization Program Manual, 1-MAN-036-EWQA-Section 1.6.1, Revision 3, May 2002.
15. Interoffice Memorandum from Thomas R. Galliffe to Eric L. D'Amico, Headspace Gas Analysis Data Evaluation Report For Waste Stream Profile RF007.01 (TRU Solidified Inorganic Waste), Lot 1, TRG-223-04, July 2004. ^(a)
16. Interoffice Memorandum from Thomas R. Galliffe to Eric L. D'Amico, Statistical Solid Analysis Data Evaluation Report For Transuranic (TRU) Solidified Inorganic Waste Sampling Lot 1 (Waste Stream Profile RF007.01), TRG-215-04, July 2004. ^(a)
17. Headspace Gas Sampling And Analysis Using An Automated Manifold, L-4231-F, March 2002.
18. Headspace Gas Sampling and Analysis Using An On-Line Integrated System, PRO-1676-HGAS-S&A, Version 2, January 2004.
19. Real-Time Radiography Testing of Transuranic and Low-Level Waste, 4-W30-NDT-00664, Version 10, March 2004.
20. Real-Time Radiography Testing of Transuranic and Low-Level Waste in Building 569, 4-I19-NDT-00569, Revision 5, January 2002.
21. Mobile Real-Time Radiography Testing of Transuranic and Low-Level Waste, PRO-1520-Mobile-RTR, Version 3, March 2004.
22. Glovebox and C-Cell Waste Operations, PRO-1358-440-VERP, Version 6, March 2004.
23. RTR Visual Examination Confirmation, Building 371, PRO-1608-VECRTR-371, Revision 0, October 2002.
24. TWCP Core-Drilling Operation, HFEF-OI-6910, Revision 2c, April 2003.
25. TWCP Solid Sample Preparation, HFEF-OI-6921, Revision 3c, July 2003.

^(a) The Waste Stream Profile Number was changed from RF007.01 to RF107.07 when the waste stream was recharacterized as mixed waste.

CHARACTERIZATION INFORMATION SUMMARY

RF107.07, Revision 0

Page 4 of 20

August 23, 2004

Form A
Reconciliation with Data Quality Objectives

I certify by signature (below) that sufficient data have been collected to determine the following Program-required waste parameters:

WSPF # RF107.07

Item	Check Box ^a	Reconciliation Parameter
1	✓	Waste Matrix Code as reported in WEMS.
2	✓	Waste Material Parameter Weights for individual containers as reported in WEMS.
3	✓	The waste matrix code identified is consistent with the type of sampling and analysis used to characterize the waste.
4	✓	Container mass and activities of each radionuclide of concern as reported in WEMS.
5	✓	Each waste container of waste contains TRU radioactive waste.
6	✓	Mean concentrations, UCL ₉₀ for the mean concentrations, standard deviations, and the number of samples collected for each VOC in the headspace gas of waste containers in the waste stream/waste stream lot.
7	✓	Mean concentrations, UCL ₉₀ for the mean concentrations, standard deviations, and number of samples collected for VOCs in the waste stream/waste stream lot. Summary Categories S3000 and S4000.
8	✓	Mean concentrations, UCL ₉₀ for the mean concentrations, standard deviations, number of samples collected for SVOCs in the waste stream/waste stream lot. Summary Categories S3000 and S4000.
9	✓	Mean concentrations, UCL ₉₀ for the mean concentrations, standard deviations, and number of samples collected for metals in the waste stream/waste stream lot. Summary Categories S3000 and S4000.
10	✓	Sufficient number of samples was taken to meet statistical sampling requirements.
11	✓	Only validated data were used in the above calculations, as documented through the site data review and validation forms and process.
12	✓	Waste containers were selected randomly for sampling, as documented in site procedures.
13	✓	The potential flammability of TRU waste headspace gases.
14	✓	Sufficient number of waste containers was visually examined to determine with a reasonable level of certainty that the UCL ₉₀ for the misclassification rate is less than 14 percent.
15	✓	Whether the waste stream exhibits a toxicity characteristic (TC) under 40 CFR Part 261, Subpart C.
16	✓	All TICs were appropriately identified and reported in accordance with the requirements of the WIPP WAP prior to submittal of a waste stream profile form for a waste stream or waste stream lot.
17	✓	The overall completeness, comparability, and representativeness QAOs were met for each of the analytical and testing procedures as specified in the WIPP WAP Sections B3-2 through B3-9 prior to submittal of a waste stream profile form for a waste stream or waste stream lot.
18	✓	The RTLs (i.e., PRQLs) for all analyses were met prior to submittal of a waste stream profile form for a waste stream or waste stream lot.
19	✓	Appropriate packaging configuration and DAC were met and documented in the headspace gas sampling documentation and the drum age was met prior to sampling.
20	✓	Whether the waste stream can be classified as hazardous or non-hazardous at the 90-percent confidence limit.

^a Check (✓) indicates that data or acceptable knowledge are sufficient to determine the waste parameters and that the waste parameters have been reported in the listed document or database. N/A indicates parameter does not apply to waste stream. NO indicates data are insufficient.


Signature of Site Project ManagerG. A. O'Leary
Printed Name8/23/04
Date

Data Summary Report— Table 1: Solid Sampling Summary

WSPF # RF107.07

Determination of Number of Retrievably Stored Waste Containers to Sample (S3000,S4000)

Preliminary Estimates of Mean, Variance, and Coefficient of Variation:

Attach a table(s) that correlates container identification numbers to data packages if different from containers used for characterization.

Description of Source Data: Preliminary samples were collected and analyzed in compliance with all requirements (specified in the WIPP Waste Analysis Plan Section B2-2a) for being counted as part of the total number of calculated required samples. Sufficient preliminary samples were collected to demonstrate sampling sufficiency – i.e., collection of additional samples other than the preliminary samples was not required. See Reference List, No 16.

Samples Randomly Selected from Waste Stream (yes/no)? Yes.

Treatment of less-than-detectable measurements: This pertains only to data for analytes in which at least one detectable measurement was obtained. Data were evaluated using one half the method detection limit (MDL) for less-than-detectable observations. See Reference List, No. 16.

Analytes that are toxicity characteristic contaminants associated with F-codes and therefore not included in the UCL₉₀ estimate calculation to determine the toxicity characteristic: Benzene, Carbon Tetrachloride, Chlorobenzene, Methyl Ethyl Ketone, Pyridine, Tetrachloroethylene, Trichloroethylene, Cadmium, Chromium, Lead and Silver.

Largest Calculated Sample Size selection and associated analyte: Pertains only to toxicity characteristic or listed waste analytes and only to those analytes where the associated EPA hazardous waste number is not assigned (i.e., it only applies to those cases where a site intends to establish that the constituent is below the regulatory threshold and the associated EPA hazardous waste number does not apply). Largest value is 0.148 for methanol.

Minimum number of containers to sample: 5 (based on WIPP Waste Analysis Plan Section B2-2a requirement that preliminary estimates be based on samples from a minimum of 5 waste containers).

Attach preliminary estimates: See Reference List, No. 16. Preliminary estimates are identical to final results because sufficient preliminary samples were collected and analyzed in compliance with all requirements for being used as required samples.

Data Summary Report— Table 1: Solid Sampling Summary (continued)

WSPF # RF107.07

Retrievably Stored Waste Sampling Results

Analytes that are toxicity characteristic contaminants associated with F-codes and therefore not included in the UCL_{90} estimate calculation to determine the toxicity characteristic: Benzene, Carbon Tetrachloride, Chlorobenzene, Methyl Ethyl Ketone, Pyridine, Tetrachloroethylene, Trichloroethylene, Cadmium, Chromium, Lead and Silver.

Largest Calculated Sample Size and associated analyte: Pertains only to toxicity characteristic or listed waste analytes and only to those analytes where the associated EPA hazardous waste number is not assigned (i.e., it only applies to those cases where a site intends to establish that the constituent is below the regulatory threshold and the associated EPA hazardous waste number does not apply). Largest value is 0.148 for methanol.

Comparison of largest calculated sample size with largest calculated sample size selected from preliminary estimate: 0.148 vs. 0.148 (for methanol).

Treatment of less-than-detectable measurements: This pertains only to data for analytes in which at least one detectable measurement was obtained. Data were evaluated using one half the method detection limit (MDL) for less-than-detectable observations. See Reference List, No. 17.

Transformations applied to data and justification: Logarithmic or Square Root transformations were applied to the data as necessary to achieve (or better achieve) a normal probability distribution of the data for UCL_{90} comparison-to RTL values.

Drums overpacked for shipment/WWIS tracking (Yes/No)? No.

If yes, overpack container identification number: _____

Sampled drums included in waste stream lot reported here (Yes/No)? Yes.

If no, WSPF # including sampled drums: _____

Newly Generated Waste Sampling Results

Batch or continuous process? N/A *

Samples randomly selected from Waste Stream? (yes/no) N/A *

Sample locations (part of process): N/A *

Treatment of less-than-detectable measurements: N/A *

Transformations applied to data and justification: N/A *

NOTES:

- * This waste stream is comprised of retrievably stored waste that was sampled by coring; therefore, Newly Generated Waste Sampling is not applicable.

CHARACTERIZATION INFORMATION SUMMARY

RF107.07, Revision 0

Page 7 of 20

August 23, 2004

Data Summary Report—Table 2: Headspace Gas Summary Data

WSPF # RF107.07

Sampling and Analysis Method (check one):

☒ 100% Sampling

☐ Reduced Sampling

2A

ANALYTE ^a	# Samples ^b	Transform Applied ^c	Normality Test (Pass/Fail) ^d	Max. Value (ppmv)	Mean ^d	Std. Dev. ^d	UCL90 ^d	Transformed RTL ^e	Un-Transformed RTL ^e (ppmv)	EPA Code ^f
1,1-Dichloroethane	0			2.9	1.247				10	
1,2-Dichloroethane	0			3.6	1.246				10	
1,1-Dichloroethylene	0			3.2	1.296				10	
cis-1,2-Dichloroethylene	0			3.2	1.4				10	
trans-1,2-Dichloroethylene	0			2.8	1.192				10	
1,1,2,2-Tetrachloroethane	0			3.4	1.28				10	
1,1,1-Trichloroethane	1	Log	Fail ^g	13	0.359	0.35	0.426	2.303	10	
1,1,2-Trichloro-1,2,2-Trifluoroethane	0			2.8	1.122				10	
1,2,4-Trimethylbenzene	0			3.5	1.203				NA	
1,3,5-Trimethylbenzene	0			3.5	1.173				NA	
Acetone	2	Log	Fail ^g	810	2.77	0.663	2.897	4.605	100	
Benzene	0			2.8	1.174				10	
Bromoform	0			2.4	1.123				10	
Butanol	0			33	12.859				100	
Carbon disulfide	0			3.6	1.433				10	
Carbon tetrachloride	1	Log	Fail ^g	3.5	0.35	0.185	0.385	2.303	10	
Chlorobenzene	0			2.8	1.021				10	
Chloroform	0			2.6	1.176				10	
Cyclohexane	0			3.4	1.42				NA	
Ethyl benzene	0			2.7	1.036				10	
Ethyl ether	0			3.5	1.433				10	
Methanol	6	Log	Fail ^g	3600	2.79	1.061	2.994	4.605	100	
Methyl ethyl ketone	0			34	14.598				100	
Methyl isobutyl ketone	0			33	11.587				100	
Methylene chloride	0			3.0	1.318				10	
o-Xylene	0			2.6	1.129				10	
m,p-Xylene	0			5.5	2.149				10	
Tetrachloroethylene	0			2.7	1.235				10	
Toluene	2	Log	Fail ^g	3.0	0.258	0.232	0.303	4.2769	72.02 ^h	
Trichloroethylene	0			2.7	1.074				10	

NOTES:

^a A total of 46 samples were collected and analyzed. Analysis was performed for all analytes identified. Samples were not composited.

^b Identifies the number of samples in which the associated analyte was detected.

^c Identifies the type of data transformation used, if applicable, to achieve (or better achieve) a normal probability distribution of the data.

Data Summary Report— Table 2: Headspace Gas Summary Data (continued)

NOTES (continued):

- ^a Statistics calculated based on using $\frac{1}{2}$ the MDL for less-than-detectable observations with data transformation as identified (Reference 15). When transformation was applied, the Mean and UCL₉₀ values presented are the transformed values (Reference 15). With no detectable concentrations, listed mean reflects average of one-half of reported MDL values for analyte and calculation of standard deviation and UCL₉₀ values is not meaningful. With fewer than five detectable concentrations, calculated values for UCL₉₀ are subject to potentially large relative error.
- ^b RTLs for headspace gas analysis results correspond to the analyte PRQL for analytes that are WIPP WAP target analytes. "NA" means the analyte is not a WIPP WAP target analyte, but instead a flammable VOC that is analyzed for compliance with the TRUPACT-II Authorized Methods for Payload Control (TRAMPAC).
- ^c No entry indicates that the respective UCL₉₀ value did not exceed the associated RTL.
- ^d Data set (with or without transformation) did not pass the test for normality. The data set that most approximated a normal distribution was used for computation of statistics.
- ^e Limit used for evaluation of EPA Hazardous Waste Code for toluene (Reference No. 3).

CHARACTERIZATION INFORMATION SUMMARY

RF107.07, Revision 0
Page 9 of 20
August 23, 2004

Data Summary Report— Table 2: Headspace Gas Summary Data (continued)

WSPF # RF107.07

2B

TENTATIVELY IDENTIFIED COMPOUND (TIC)	Maximum Observed Estimated Concentrations (ppmV)	# Samples Containing TIC
Trimethylamine (CAS No. 75-50-3) ^a	410	17

Did the data verify the acceptable knowledge? ☒ Yes ☐ No

Data as reported in Data Summary Report -- Table 2 confirms acceptable knowledge in that no EPA codes, other than those already assigned by acceptable knowledge, are applicable.

If not, describe the basis for assigning the EPA Hazardous Waste Codes:

NOTES:

- ^a TIC is not listed in 40 CFR 261, Appendix VIII and so was not added to the target analyte list for the waste stream..

CHARACTERIZATION INFORMATION SUMMARY

RF107.07, Revision 0

Page 10 of 20

August 23, 2004

Data Summary Report— Table 3: Metals Summary Data

WSPF # RF107.07

Sampling and Analysis Method/Units (check one):

☒ Totals (units are in mg/kg)

☐ TCLP (units are in mg/l)

ANALYTE ^a	# Samples ^b	Transform Applied ^c	Normality Test (Pass/Fail) ^d	Min. Sample Size ^d	Mean ^d	UCL ₉₀ ^d	Transformed RTL ^e	Un-Transformed RTL ^e (mg/kg)	EPA Code ^f
Antimony	4	Sq. Rt.	Pass	0.005	1.223	1.512	10	100	
Arsenic	5	Log	Pass	0.070	1.864	2.189	4.605	100	
Barium	5	Log	Pass	0.134	6.496	6.677	7.601	2000	
Beryllium ^g	5	None	Pass	0.000	1.68	1.968	N/A	100	
Cadmium	5	Log	Pass	0.120	-0.005	0.460	2.996	20	
Chromium	5	None	Fail ^h	65.776	87.4	133.100	N/A	100	D007
Lead	5	Sq. Rt.	Pass	0.017	3.5	3.882	10	100	
Mercury	5	Log	Pass	0.102	-2.927	-2.311	1.386	4	
Nickel	5	Log	Pass	0.226	3.385	3.644	4.605	100	
Selenium	4	None	Pass	0.004	1.569	2.085	N/A	20	
Silver	4	Log	Pass	0.812	0.537	2.177	4.605	100	
Thallium	3	Log	Pass	0.227	-0.017	0.967	4.605	100	
Vanadium	5	Log	Pass	42.391	4.42	4.959	4.605	100	None
Zinc	5	None	Pass	3.249	75.4	95.229	N/A	100	

Did the data verify the acceptable knowledge? ☒ Yes ☐ No

Data as reported in Data Summary Report – Table 3 confirms acceptable knowledge in that no toxicity characteristic metal EPA codes are applicable. In accordance with 40 CFR 268.9(a), characteristic EPA Hazardous Waste codes do not need be identified for a listed waste, where the treatment standards for the listed waste addresses the characteristic. Because the treatment standard for F006, F007, and F009 address the toxicity characteristic for chromium, D007 is not assigned to this waste stream. Consequently, no new EPA Hazardous Waste Codes are required to be added to the EPA Hazardous Waste Codes assigned by AK for this waste stream.

If not, describe the basis for assigning the EPA Hazardous Waste Codes.

NOTES:

- ^a A total of 5 samples were collected and analyzed. Analysis was performed for all analytes identified.
- ^b Identifies the number of samples in which the associated analyte was detected.
- ^c Identifies the type of data transformation used, if applicable, to achieve (or better achieve) a normal probability distribution of the data.
- ^d Statistics calculated based on using 1/2 the MDL values for all less-than-detectable observations with data transformation as identified (Reference 16). When transformation was applied, the Mean and UCL₉₀ values presented are the transformed values (Reference 16). No entry indicates no detectable measurements available for statistics.
- ^e RTLs correspond to the analyte PRQL for analytes that are not characteristic hazardous waste constituents.
- ^f No entry indicates that the applicable UCL₉₀ value did not exceed the associated RTL.

Data Summary Report— Table 3: Metals Summary Data (continued)

NOTES (continued):

- ^g The EPA hazardous waste number P015, beryllium powder, is not applicable to this waste stream. The applicable regulations controlling the identification of U and P listed hazardous wastes are given in 40 CFR 261.33, Discarded Commercial Chemical Products, Off-Specification Species, Container Residues, and Spill Residues Thereof. Within this regulation, it states that "The phrase 'commercial chemical product or manufacturing chemical intermediate having the generic name listed in...' refers to a chemical which is manufactured or formulated for commercial or manufacturing use which consists of the commercially pure grade of the chemical, any technical grades of the chemical that are produced or marketed, and all formulations in which the chemical is the sole active ingredient. It does not refer to a material, such as a manufacturing process waste, that contains any of the substances listed in paragraph (e) or (f). Where a manufacturing process waste is deemed to be a hazardous waste because it contains a substance listed in paragraph (e) or (f), such waste will be listed in either Sec. 261.31 or Sec. 261.32 or will be identified as a hazardous waste by the characteristics set forth in subpart C of this part." Beryllium parts were used in the manufacture/assembly of weapons components, and residual beryllium contamination of plutonium parts may have occurred. As a result beryllium is present in the solidified inorganic waste. The beryllium is present as a contaminant of the process and not as unused commercial chemical product, and therefore is not a P015-listed waste.
- ^h Data transformation did not pass the test for normality. The data transformation that most approximated a normal distribution was used for computation of statistics.

CHARACTERIZATION INFORMATION SUMMARY

RF107.07, Revision 0

Page 12 of 20

August 23, 2004

Data Summary Report—Table 4: Total VOC Summary Data

WSPF # RF107.07

4A

ANALYTE ^a	# Samples ^b	Transform Applied ^c	Normality Test (Pass/Fail) ^d	Min. Sample Size ^d	Mean ^d	UCL ₉₀ ^d	Transformed RTL ^e	Un-Transformed RTL ^e (mg/kg)	EPA Code ^f
1,1-Dichloroethylene	0				0.09			14	
trans-1,2-Dichloroethylene	0				0.17			10	
1,2-Dichloroethane	0				0.17			10	
1,1,1-Trichloroethane	0				0.17			10	
1,1,2-Trichloro-1,2,2-Trifluoroethane	0				0.17			10	
1,1,2-Trichloroethane	0				0.09			10	
1,1,2,2-Tetrachloroethane	0				0.18			10	
Acetone	0				0.68			100	
Benzene	0				0.09			10	
Bromoform	0				0.17			10	
Butanol	0				0.68			100	
Carbon disulfide	0				0.09			10	
Carbon tetrachloride	0				0.18			10	
Chloroform	0				0.17			120	
Chlorobenzene	0				0.09			10	
Ethyl benzene	0				0.09			10	
Ethyl ether	0				1.12			100	
Isobutanol	0				0.68			100	
Methanol	2	None	Fail ^g	0.148	15.93	30.403	N/A	100	
o-Xylene	0				0.09			10	
m,p-Xylene	0				0.17			10	
Methyl ethyl ketone	0				0.68			100	
Methylene chloride	2	Log	Fail ^g	0.129	-1.66	-1.024	2.303	10	
Tetrachloroethylene	0				0.09			10	
Toluene	0				0.09			10	
Trichloroethylene	0				0.18			10	
Trichlorofluoromethane	0				0.09			10	
Pyridine	0				1.57			100	
Vinyl chloride	0				0.09			4	

NOTES:

- ^a A total of 5 samples were collected and analyzed. Analysis was performed for all analytes identified.
- ^b Identifies the number of samples in which the associated analyte was detected.
- ^c Identifies the type of data transformation used, if applicable, to achieve (or better achieve) a normal probability distribution of the data.
- ^d Statistics calculated based on using 1/2 the MDL values for all less-than-detectable observations with data transformation as identified (Reference 16). No entry indicates no detectable measurements available for statistics.
- ^e RTLs correspond to the analyte PRQL for analytes that are F-listed hazardous waste constituents or to the applicable total RTL value as calculated from the TC RTL. RTLs correspond to the analyte PRQL for analytes that are not F-listed or characteristic hazardous waste constituent.

Data Summary Report—Table 4: Total VOC Summary Data (continued)

NOTES (continued):

- ¹ No entry indicates that the applicable UCL_{90} value did not exceed the associated RTL.
- ² Data transformation did not pass the test for normality. The data transformation that most approximated a normal distribution was used for computation of statistics.

CHARACTERIZATION INFORMATION SUMMARY

RF107.07, Revision 0

Page 14 of 20

August 23, 2004

Data Summary Report— Table 4: Total VOC Summary Data (continued)

WSPF # RF107.07

4B

TENTATIVELY IDENTIFIED COMPOUND (TIC) CHEMICAL ABSTRACTS SERVICE (CAS) Number	Maximum Observed Estimated Concentrations (mg/kg)	# Samples Containing TIC
No TICs identified in the solid VOC samples for the waste stream lot.		

Did the data verify acceptable knowledge? ☒ Yes ☐ No

Data as reported in Data Summary Report – Table 4 confirm acceptable knowledge in that no toxicity characteristic organic or F-listed solvent EPA codes, other than those already assigned by acceptable knowledge, are applicable.

If no, describe the basis for assigning EPA Hazardous Waste Codes.

Data Summary Report— Table 5: Total SVOC Summary Data

WSPF # RF107.07

5A

ANALYTE ^a	# Samples ^b	Transform Applied ^c	Normality Test (Pass/Fail) ^d	Min. Sample Size ^d	Mean ^d	UCL ₉₀ ^d	Transformed RTL ^e	Un-Transformed RTL ^e (mg/kg)	EPA Codes ^f
1,2-Dichlorobenzene	0				0.12			40	
1,4-Dichlorobenzene	0				0.12			150	
2,4-Dinitrophenol	0				0.18			40	
2,4-Dinitrotoluene	0				0.11			2.6	
2-Methylphenol	0				0.12			40	
3-&4-Methylphenol	0				0.22			40	
Hexachlorobenzene	0				0.11			2.6	
Hexachloroethane	0				0.12			60	
Nitrobenzene	0				0.12			40	
Pentachlorophenol	0				0.1			2,000	

NOTES:

- ^a A total of 5 samples were collected and analyzed. Analysis was performed for all analytes identified.
- ^b Identifies the number of samples in which the associated analyte was detected.
- ^c Identifies the type of data transformation used, if applicable, to achieve (or better achieve) a normal probability distribution of the data.
- ^d Statistics calculated based on using ½ the MDL values for all less-than-detectable observations with data transformation as identified (Reference 16). No entry indicates no detectable measurements available for statistics.
- ^e RTLs correspond to the analyte PRQL for analytes that are F-listed hazardous waste constituents or to the applicable total RTL value as calculated from the TC RTL. RTLs correspond to the analyte PRQL for analytes that are not F-listed hazardous waste constituents or characteristic hazardous waste constituents.
- ^f No entry indicates that the applicable UCL₉₀ value did not exceed the associated RTL.

Data Summary Report— Table 5: Total SVOC Summary Data (continued)

WSPF # RF107.07

5B

TENTATIVELY IDENTIFIED COMPOUND (TIC) CHEMICAL ABSTRACTS SERVICE (CAS) Number	Maximum Observed Estimated Concentrations (mg/kg)	# Samples Containing TIC
No TICs identified in the solid SVOC samples for the waste stream lot.		

Did the data verify acceptable knowledge? ☒ Yes ☐ No

Data as reported in Data Summary Report – Table 5 confirm acceptable knowledge in that no toxicity characteristic organic or F-listed solvent EPA codes, other than those already assigned by acceptable knowledge, are applicable..

If no, describe the basis for assigning EPA Hazardous Waste Codes.

Data Summary Report— Table 6: Exclusion of Prohibited Items**WSPF # RF107.07**

The absence of prohibited items is documented through acceptable knowledge. Radiography or visual examination is performed on each container in this waste stream to verify the absence of the following prohibited items:

- Liquid waste (waste shall contain as little residual liquid as is reasonably achievable by pouring, pumping and/or aspirating, and internal containers shall contain less than 1-inch or 2.5-centimeters of liquid in the bottom of the container. Total residual liquid in any payload container (e.g., 55-gallon drum or standard waste box) may not exceed 1 percent volume of that container.)
- Non-radionuclide pyrophoric materials
- Waste incompatible with backfill, seal and panel closure materials, container and packaging materials, shipping container materials, or other wastes
- Explosives or compressed gases
- Waste exhibiting the characteristics of ignitability, corrosivity or reactivity
- Non-mixed hazardous waste

Newly generated waste is characterized by visual verification (VV) at the time of waste packaging using the visual examination (VE) technique unless the use of radiography in lieu of, or in combination with, visual verification is justified by any of the following criteria:

- Visual verification was conducted during packaging, but was unacceptable,
- Visual verification requires extensive handling of high gram content waste that results in high radioactive exposure for the VV personnel,
- Situations where waste packaging is conducted at numerous locations generating small quantities of transuranic waste requiring a large number of VV personnel, and/or
- Where waste was originally packaged as low-level waste, but subsequently determined to be transuranic.

Each container of waste is certified and shipped only after radiography and/or VE either:

- Did not identify any prohibited items in the waste container, or
- All prohibited items found in a waste container by radiography or VE are identified and corrected (i.e., eliminated or removed) through the site non-conformance reporting system.

CHARACTERIZATION INFORMATION SUMMARY

RF107.07, Revision 0
Page 18 of 20
August 23, 2004

Data Summary Report— Table 7: Correlation
of Container Identification to Batch Data Reports

WSPF # RF107.07

Package No.	Org. Package No.	Radioassay Data Package	Solid Sample Batch No. ^a	Metals Data Package ^a	VOC Data Package ^a	SVOC Data Package ^a	Headspace Sample Batch No.	Headspace VOC Data Package	RTR Data Package	VE or VV Data Package ^b
D61092		440IP1-DP-050203					04W0224	HGAS-DP-00940	6T-2187	
D83260		440IP1-DP-060203					04W0246	HGAS-DP-00962	MT0098	
D87380		440IP1-DP-053003					04W0248	HGAS-DP-00964	5R0010	
D87381		440IP1-DP-051204					04W0203	HGAS-DP-00919	MT0095	
D88278		440IP1-DP-122603					04W0130	HGAS-DP-00846	5R0010	VE-2004-002
D89329		440IP1-DP-040504					04W0221	HGAS-DP-00937	6T-2170	
D90492		440IP1-DP-060204					04W0292	HGAS-DP-01007	5R-0008	
D90498		440IP1-DP-040504					04W0221	HGAS-DP-00937	6T-2170	
D90503		589IP1-DP-012403					03W0084	HGAS-DP-00441	5R-0008	
D90627		440IP1-DP-032904					04W0224	HGAS-DP-00940	MT0095	
D90642		440IP1-DP-040504					04W0220	HGAS-DP-00936	MT0053	
D94595		440IP1-DP-060303					04W0248	HGAS-DP-00964	6R019	
D95204		440IP1-DP-050203					04W0288	HGAS-DP-01004	6R-064	
D95206		440IP1-DP-052903					04W0247	HGAS-DP-00963	6R-064	
D95209		440IP1-DP-030204					04W0160	HGAS-DP-00876	6R-064	
D95213		440IP1-DP-050203					04W0290	HGAS-DP-01006	6R-064	
D95223		440IP1-DP-061303					04W0289	HGAS-DP-01005	6R-064	
D96133		440IP1-DP-060904					04W0298	HGAS-DP-01013	6R-052	
D96135		440IP1-DP-040504					04W0221	HGAS-DP-00937	6T-2170	
D96137		440IP1-DP-012204					04W0131	HGAS-DP-00847	6R-052	VE-2004-002
D96144		440IP1-DP-030804					04W0154	HGAS-DP-00870	6R-052	
D96145		440IP1-DP-050203					04W0290	HGAS-DP-01006	6R-052	
D96146		440IP1-DP-052903					04W0263	HGAS-DP-00979	6R-052	
D96147		440IP1-DP-061303					04W0229	HGAS-DP-00945	6R-052	
D96320		440IP1-DP-032204					04W0078	HGAS-DP-00796	6R019	
DA1238		440IP1-DP-042203					03W0093	HGAS-DP-00451	5T0117	
DA2203		440IP1-DP-060904					04W0299	HGAS-DP-01014	6T1676	
DA2214		440IP1-DP-061504					04W0290	HGAS-DP-01006	6T1676	

CHARACTERIZATION INFORMATION SUMMARY

RF107.07, Revision 0
Page 19 of 20
August 23, 2004

Data Summary Report— Table 7: Correlation
of Container Identification to Batch Data Reports (continued)

Package No.	Orig. Package No.	Radioassay Data Package	Solid Sample Batch No. ^a	Metals Data Package ^a	VOC Data Package ^a	SVOC Data Package ^a	Headspace Sample Batch No.	Headspace VOC Data Package	RTR Data Package	VE or VV Data Package ^b
DB2632		440IP1-DP-032404					04W0202	HGAS-DP-00918	5T0146	
DB8879		440IP1-DP-052004					04W0238	HGAS-DP-00954	MT-0096	
DB8883		440IP1-DP-040604					04W0220	HGAS-DP-00936	5T0256	
DB8898		440IP1-DP-042203					03W0093	HGAS-DP-00451	5T0213	
DB8696		440IP1-DP-060303					04W0248	HGAS-DP-00984	5T-0254	
DC0678		440IP1-DP-030204					04W0160	HGAS-DP-00876	5T-0254	
DC0708		440IP1-DP-040604					04W0220	HGAS-DP-00936	5T0256	
DC0714		440IP1-DP-052504					04W0275	HGAS-DP-00991	5T-0253	
DC3779		440IP1-DP-052504					04W0275	HGAS-DP-00991	5T-0253	
DC3781		440IP1-DP-033104					04W0227	HGAS-DP-0943	5T0256	
DC3784		440IP1-DP-052504					04W0275	HGAS-DP-00991	5T-0254	
DC3786		440IP1-DP-040604					04W0220	HGAS-DP-00936	5T0256	
DC4267		440IP1-DP-040604					04W0220	HGAS-DP-00936	5T0256	
DD8524	D84846 ^c	569IP1-DP-012403	WCS-03-02	ALD03012M	ALD03007V ALD03009N	ALD03007S	04W0226	HGAS-DP-0942	MT0020	
DD8525	DB4954 ^c	569IP1-DP-021803	WCS-03-03	ALD03013M	ALD03009V ALD03011N	ALD03009S	03W0095	HGAS-DP-00450	5T-0147	
DD8532	D88817 ^c	569IP1-DP-012403	WCS-03-03	ALD03013M	ALD03009V ALD03011N	ALD03009S	04W0226	HGAS-DP-0942	MT0020	
DD8537	D86081 ^c	569IP1-DP-012303	WCS-03-03	ALD03012M	ALD03007V ALD03009N	ALD03007S	03W0074	HGAS-DP-00433	MT0020	
DE0468	O01295 ^c (D88273)	440FM1-DP-071403	WCS-03-15	ALD03030M	ALD03027V ALD03030N	ALD03027S	03W0272	HGAS-DP-00603	6T-2156	

NOTES:

- ^a No entry indicates container was not selected or used for solid sampling.
- ^b No entry indicates container was characterized using radiography and was not selected for visual examination to confirm radiography.
- ^c Containers were solid sampled in accordance with References 24 and 25.

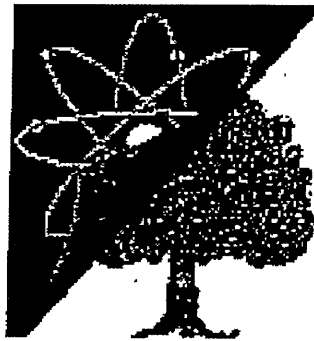
CHARACTERIZATION INFORMATION SUMMARY

RF107.07, Revision 0
Page 20 of 20
August 23, 2004

Acceptable Knowledge Summary

WSPF # RF107.07

RMRS-WIPP-98-100, Acceptable Knowledge TRU/TRM Waste Stream Summaries, Section 7.29, TRM Solidified Inorganic Waste (F001, F002, F005, F006, F007, F009, P030, P098, P099, P106, U003, U103, U108) (attached).



Rocky Flats Environmental Technology Site

ACCEPTABLE KNOWLEDGE INFORMATION

**ACCEPTABLE KNOWLEDGE TRU/TRM
WASTE STREAM SUMMARIES**

RMRS-WIPP-98-100

Section 7.29

TRM Solidified Inorganic Waste

**(F001, F002, F005, F006, F007, F009,
P030, P098, P099, P106, U003, U103, U108)**

Profile No. RF107.07

Revision 1

Reviewed for Classification/UCNI
By: Unclassified Not UCNI
Reference Exemption Number CEX-032-00
Date: August 23, 2004

Approval signatures in Site Document Control history file

7.29 TRM Solidified Inorganic Waste (F001, F002, F005, F006, F007, F009, P030, P098, P099, P106, U003, U103, U108)

Profile No. RF107.07

Acceptable Knowledge (AK) Waste Stream Summary

Waste Stream Name: TRM Solidified Inorganic Waste (F001, F002, F005, F006, F007, F009, P030, P098, P099, P106, U003, U103, U108)

Generation Buildings: Buildings 750 Pad, 774 ^(1,6)

Waste Stream Volume (Retrievably Stored): 268 55-gallon drums ^(1,6)

Generation Dates (Retrievably Stored): July 1988 - October 2001 ^(1,6)

Waste Stream Volume (Newly Generated): None ⁽¹⁾

Generation Dates (Newly Generated): N/A

Waste Stream Volume (Projected): None ⁽¹⁾

Generation Dates (Projected): N/A

TRUCON Content Code ⁽²⁾: RF111A/211A, RF111B/211B, RF111D/211D, RF111DF/211DF, RF111E/211E, RF111H/211H, RF111J/211J, RF111K/211K, RF111P/211P, RF111PF/211PF, RF126A/226A, RF126D/226D, RF126DA/226DA, RF126DAF/226DAF, RF126DF/226DF, RF126E/226E, RF126J/226J, RF126K/226K, RF126L/226L, RF126P/226P, RF126PF/226PF

Process Knowledge Demonstrates Flammable VOCs in Headspace < 500 ppm: No (see Section 7.29.6)

7.29.1 Transuranic Waste Baseline Inventory Report Information ⁽³⁾

WIPP Identification Number(s): RF-TT0802 and RF-TT0809

Summary Category Group: S3000 Waste Matrix Code Group: Solidified Inorganics, Solidified Organics ^(See Note)

Waste Matrix Code: Z1110 ^(See Note) Waste Stream Name: Solidified Lab Waste/TRU, Organic Resins/TRU ^(See Note)

Description from the WTWBIR: IDC 802 is a cemented final waste form. IDC 809 consists of unleached resin (IDC 430) and leached resin (IDC 431).

NOTE: The waste stream name for RF-TT0809 is incorrect; the waste is cemented resin. In addition, this combined waste stream has been characterized as mixed waste and the waste stream name changed to TRM Solidified Inorganic Waste. The waste matrix code group for cemented resin and the waste matrix code for solidified lab waste in the Waste Isolation Pilot Plant Transuranic Waste Baseline Inventory Report (WTWBIR) are incorrect. The waste is greater than 50 percent inorganic, consisting of small quantities of aqueous liquids and/or organic resin solidified

in large quantities of Portland cement; therefore, Waste Matrix Code S3190 has been designated for this waste. The Waste Stream Name, Description, Summary Category Group, Waste Matrix Code, and Environmental Protection Agency (EPA) Hazardous Waste Numbers are based on AK (see Section 7.29.2).

7.29.2 Waste Stream Description

Transuranic Mixed (TRM) Solidified Inorganic Waste assigned EPA Hazardous Waste Numbers F001, F002, F005, F006, F007, F009, P030, P098, P099, P106, U003, U103, and U108 consists of solidified laboratory waste [item description code (IDC) 802] and cemented resin (IDC 809) originally generated in the Miscellaneous Waste Handling process in Building 774. This material is similar in material, physical form, and hazardous constituents and is therefore considered a single waste stream. Table 7.29-1 presents the waste matrix code and waste material parameters for the TRM Solidified Inorganic Waste. ⁽⁴⁾

Table 7.29-1, TRM Solidified Inorganic Waste (F001, F002, F005, F006, F007, F009, P030, P098, P099, P106, U003, U103, U108)

IDC	IDC Description	Waste Matrix Code	Waste Material Parameters	Weight % (Average)
802	Solidified Laboratory Waste – Building 774	S3190, Unknown/Other Inorganic Homogeneous Solids	Inorganic Matrix	100%
809	Cemented Resin	S3190, Unknown/Other Inorganic Homogeneous Solids	Inorganic Matrix	100%

Note: The above Waste Material Parameter addresses the waste material proper and does not include internal packaging (e.g., inner bags), container packaging (e.g., fiberboard liner), absorbent, secondary wastes, etc.

IDC 802, Solidified Laboratory Waste – Building 774: Solidified laboratory waste is neutralized aqueous liquid waste solidified with Portland cement and Ramcote® 1200 (a mixture of inorganic materials including silica, clay, Portland cement, and diatomaceous earth) in the Miscellaneous Waste Handling process in Building 774. Limited quantities of ion exchange resin (IDCs 430 and 431) may also be solidified with the liquid waste. Small quantities of absorbent [oil dry or NoChar® (i.e., a polymer absorbent)] may be added when necessary during repackaging to absorb potential residual liquid. ^(5,7,8,11,12)

IDC 809, Cemented Resin: Cemented resin consists primarily of leached and unleached ion-exchange resins (IDCs 430 and 431) which have been solidified with Portland cement, Ramcote® 1200, and water. The resin itself is composed of small polystyrene beads in which long-chain organic compounds with an activated group are imbedded. Small quantities of absorbent (oil dry or NoChar®) may be added when necessary during repackaging to absorb potential residual liquid. ^(5,7,8,11,12)

7.29.3 Areas of Operation

TRM Solidified Inorganic Waste assigned EPA Hazardous Waste Numbers F001, F002, F005, F006, F007, F009, P030, P098, P099, P106, U003, U103, and U108 was generated by the following defense operations in Buildings 774 and 750 Pad: ^(5,6,7,8)

- Waste Treatment Operations
- Waste Repackaging Operations

7.29.4 Generation Processes

TRM Solidified Inorganic Waste assigned EPA Hazardous Waste Numbers F001, F002, F005, F006, F007, F009, P030, P098, P099, P106, U003, U103, and U108 was generated from waste treatment operations in Building 774. Liquid wastes solidified in Building 774 included aqueous wastes that were incompatible with the Site liquid waste treatment process. These liquid wastes included waste from analytical and research development laboratories and concentrated chloride waste from Building 771 Recovery operations. The lab waste was collected in small containers and transferred to Building 774 for processing. The chloride waste was received directly by pipeline transfer into Tank T-7 in Building 774. In addition, ion exchange resins from plutonium recovery and purification processes in Buildings 371 and 771 were collected in small containers and transferred to Building 774 for processing. Individual containers of aqueous liquid waste and/or ion exchange resin were batched for solidification in the Miscellaneous Waste Handling process. Bottles of aqueous liquids were bagged into the glovebox and emptied by vacuum into receiver and neutralizer Tank T-7, adjacent to the glovebox. Solutions were verified basic by checking with pH paper. For acids, sodium hydroxide reagent was added until the neutralized solution was basic, and the neutralized waste was then drained back into the glovebox. A hose directed the waste into a drum containing a mixture of Portland cement and Ramcote® 1200. A maximum of 80 liters of basic waste solution was added to the prepared drum and mixed with the cement. The amount of resin, if added to the mixture, was limited to a maximum of 2 kg per container with 70 liters of basic waste solution. The material was then mixed and allowed to solidify. The combination of cements allowed absorption and solidification to occur in the waste form, thus creating the solidified waste designated as IDC 802. ^(5,7,12)

Ion exchange resin was also bagged into the glovebox and then placed into the prepared drums containing Portland cement, water, and Ramcote® 1200. The material was then mixed and allowed to solidify. After solidification, the filled drums were then separated from the glovebox by standard bag cut procedure and designated as IDC 809. ^(5,7,12)

Waste containers of solidified lab waste and cemented resin are also repackaged in the Building 750 Pad, as necessary, to correct original packaging configuration deficiencies to meet WIPP-Waste Acceptance Criteria (WAC) requirements. Small quantities of absorbent (oil dry or NoChar®) may also be added when necessary during repackaging to absorb potential residual liquid. ^(8,11)

Process flow diagrams for the waste treatment and waste repackaging operations can be found in the Waste Stream and Residue Identification and Characterization (WSRIC) Building Books. ^(7,8)

7.29.5 RCRA Characterization

This waste stream is characterized as a mixed waste. The specific Backlog Waste Reassessment (BWR) Baseline Book Subpopulations and WSRIC Process Numbers associated with TRM Solidified Inorganic Waste assigned EPA Hazardous Waste Numbers F001, F002, F005, F006, F007, F009, P030, P098, P099, P106, U003, U103, and U108 are listed in the Waste and Environmental Management System (WEMS) AK Waste Stream Summary for Profile Number RF107.07. ⁽⁶⁾

Visual examination of waste contents at the time of packaging and/or real-time radiography (RTR) is used to verify that the waste stream is not a liquid waste and does not contain explosives, non-radionuclide pyrophoric materials, compressed gases, or reactive waste. Although materials in this waste stream are derived from the treatment of cyanide-bearing wastes, the waste is not cyanide-reactive and the cyanide concentrations are below land disposal treatment standards as described in Reference 13. Therefore, this waste stream does not exhibit the characteristics of ignitability (D001), corrosivity (D002), or reactivity (D003). ^(13,14,15)

Beryllium parts were used in the manufacture/assembly of weapons components, and residual beryllium contamination of plutonium parts may have occurred; therefore, the solidified inorganic wastes may have been contaminated with beryllium, and residual quantities of beryllium may be present in the waste stream. Any beryllium present (less than 1% by weight) is a contaminant of the process, and is not an unused commercial chemical product, and, therefore, is not a P015-listed waste. ⁽⁹⁾

No hazardous waste from specific sources (40 CFR 261.32) was generated at the site. Therefore no K listings have been applied to this waste stream. ^(4,5)

TRM Solidified Inorganic Waste was historically characterized as nonhazardous waste based on historical analytical data, including a toxicity characteristic leaching procedure (TCLP) analysis for metals, and AK. However, it was recently determined that the lab waste solutions could have contained excess sample material, including samples of listed waste. Therefore, this waste stream is conservatively characterized as a listed waste based on the mixture and derived from rules. EPA Hazardous Waste Numbers F001, F002, and F005, are assigned because the excess sample material could have been contaminated with regulated spent solvents (e.g., carbon tetrachloride, methyl ethyl ketone, methylene chloride, toluene, 1,1,1, trichloroethane, and 1,1,2-trichloro-1,2,2- trifluoroethane). EPA Hazardous Waste Numbers F006, F007, and F009 are assigned because excess sample material could include treated aqueous wastes from Building 374 treatment facility that includes aqueous waste from electroplating operations (e.g., spent cyanide bath and rinse solutions that contained cadmium, chromium, nickel, and silver). EPA Hazardous Waste Numbers P030, P098, P099, P106, U003, U103, and U108 are assigned because the excess sample material could

include aqueous waste from the Building 374 treatment facility. This aqueous waste was contaminated with soluble cyanide salts, including potassium cyanide, potassium silver cyanide, and sodium cyanide as well as acetonitrile, dimethyl sulfate, and 1,4-dioxane. These waste chemicals were treated in Building 881 and the treatment effluent was subsequently transferred to the radioactive aqueous waste treatment facility in Building 374. EPA hazardous waste Number U003 is assigned to this waste stream due to the mixture rule and not due to ignitability. The Waste Stream Profile Number was changed from RF007.01 to RF107.07, when the waste stream was recharacterized as mixed waste with EPA Hazardous Waste Numbers F001, F002, F005, F006, F007, F009, P030, P098, P099, P106, U003, U103, and U108. ⁽⁵⁾

Confirmatory solid samples were analyzed for total metal, volatile organic compounds (VOC), and semivolatile organic compound (SVOC) constituents. Statistics were calculated based on using one-half the method detection limit (MDL) for less-than-detectable observations with data transformation applied, where appropriate. Using this "WIPP-directed" method, the calculated 90 percent upper confidence limit (UCL₉₀) of the mean concentrations did exceed the associated regulatory threshold limit (RTL) value for chromium. Because the treatment standard for EPA Hazardous Waste Numbers F006, F007, and F009 address the toxic characteristic for chromium, EPA Hazardous Waste Number D007 was not assigned to this waste. Consequently, no new EPA Hazardous Waste Numbers are required to be added to the EPA Hazardous Waste Numbers F001, F002, F005, F006, F007, F009, P030, P098, P099, P106, U003, U103, and U108 that were assigned by AK for this waste stream. ^(5,9)

Headspace gas sampling and analysis of containers assigned to this waste stream by AK detected five VOCs (acetone, carbon tetrachloride, methanol, toluene, and 1,1,1-trichloroethane). Statistics were calculated based on using one-half the MDL for less-than-detectable observations with data transformation applied where appropriate. Using this "WIPP-directed" method, the calculated 90 percent UCL₉₀ of the mean concentrations for none of the analytes were found to exceed their associated RTL values. Therefore, the headspace data confirms the AK characterization that no additional characteristic volatile organic or F-listed solvent EPA codes are required. ⁽¹⁰⁾

7.29.6 Transportation

The payload containers in the waste stream must also comply with the TRUPACT-II Authorized Methods for Payload Control (TRAMPAC) requirements. Flammable volatile organic compounds (VOCs) including acetone, methanol, and toluene were identified in this waste stream based on the descriptions in the *BWR Baseline Book* and headspace gas sampling and analysis. Therefore, flammable VOCs in the payload container headspace have the potential to exceed 500 ppm. All payload containers, including those that exceed 500 ppm flammable VOCs in the headspace gas, are evaluated for compliance with applicable TRAMPAC requirements using the eTRAMPAC system prior to shipment. Any containers not passing the eTRAMPAC compliance evaluation are identified and corrected through the site non-conformance reporting system ^(5,10)

7.29.7 Radionuclides

Table 7.29-2 summarizes the radionuclides that may be present in TRM Solidified Inorganic Waste assigned EPA Hazardous Waste Numbers F001, F002, F005, F006, F007, F009, P030, P098, P099, P106, U003, U103, and U108. ⁽⁴⁾

Table 7.29-2, TRM Solidified Inorganic Waste Radionuclides

IDC #	Description	Radionuclides
802	Solidified Laboratory Waste - Building 774	WG Pu, Am-241, Am-243, DU, EU, Np-237
809	Cemented Resin	WG Pu, Am-241, Am-243, DU, EU, Np-237

Key:

WG Pu weapons-grade plutonium
Am-241 americium-241
Am-243 americium-243
DU depleted uranium
EU enriched uranium
Np-237 neptunium-237

7.29.8 References

1. Wastren 2004. Interoffice Memorandum from M. L. Johnson to Waste Records Center. Current and Projected Waste Volumes for TRM Solidified Inorganic Waste (F001, F002, F005, F006, F007, F009, P030, P098, P099, P106, U003, U103, and U108) RF107.07, MLJ-059-2004, August 9, 2004.
2. RFETS 2004. Transuranic (TRU) Waste Management Manual, Version 7, 1-MAN-008-WM-001.
3. DOE 1995. Transuranic Waste Baseline Inventory Report, Revision 0. DOE/CAO-95-1121.
4. RMRS 2004. RFETS TRU Waste Acceptable Knowledge Supplemental Information. RF/RMRS-97-018, Revision 13.
5. RFETS 2004. Backlog Waste Reassessment Baseline Book, Waste Form 60, Solidified Lab Waste.
6. Waste and Environmental Management System (WEMS) database.
7. RFETS 2001. Waste Stream and Residue Identification and Characterization Building 774, Version 6.0.
8. RFETS 2004. Waste Stream and Residue Identification and Characterization Building 750_Pad, Version 7.0.
9. Interoffice Memorandum from Thomas R. Gatcliffe to Eric L. D'Amico, Statistical Solid Analysis Data Evaluation Report For Transuranic (TRU) Solidified Inorganic Waste Sampling Lot 1 (Waste Stream Profile RF007.01), TRG-215-04, July 13, 2004. ^(a)

10. Interoffice Memorandum from Thomas R. Gatcliffe to Eric L. D'Amico, Headspace Gas Analysis Data Evaluation Report For Waste Stream Profile RF007.01 (TRU Solidified Inorganic Waste), Lot 1, TRG-223-04, July 20, 2004. ^(a)
11. RFETS 2004. Solid Radioactive Waste Packing Requirements Manual, 1-M12-WO-4034, Version 10.
12. RFETS 1998. Miscellaneous Aqueous Waste Handling and Solidification, 4-A73-POPM-774-WO-2005, Revision 4.
13. WASTREN 2003. Interoffice Memorandum from Scott Smith to Waste Records. Reactivity Characteristic Evaluation for Waste Derived from Aqueous Liquid Waste Treatment Operations, SMS-008-2003. November 17, 2003.
14. Department of Energy, Carlsbad Field Office letter from Dr. Ines Triay and S. D. Warren to Mr. Steve Zappe; Request for Permit Modification to the Hazardous Waste Facility Permit, Permit Number NM4890139088-TSDF, Waste Characterization Updates and Other Process Improvements; Item 5: Add New Hazardous Waste Numbers, May 13, 2003.
15. State of New Mexico Environment Department letter from Ron Curry to Dr. Ines Triay and Dr. Steven Warren; Final Determination, Class 2 Modification Requests WIPP Hazardous Waste Facility Permit EPA I.D. NM4890139088; approving Item 5 to add hazardous waste numbers, September 11, 2003.

^(a) The Waste Stream Profile Number was changed from RF007.01 to RF107.07 when the waste stream was recharacterized as mixed waste (see Section 7.29.5).